A.D. 1885, 19*th* MAY. N° 6114.

PROVISIONAL SPECIFICATION.

Improvements in Machines for Weighing and Measuring Grain, Flour, Dust, and Liquids.

I, WILLIAM OAKLEY of Albion Mills, Walsall in the County of Stafford, Miller, do hereby declare the nature of my Invention for "IMPROVEMENTS IN MACHINES FOR WEIGHING AND MEASURING GRAIN, FLOUR, DUST, AND LIQUIDS" to be as follows:—

This invention is designed for the purpose of weighing and measuring grain, flour, dust, meal, seeds, and other analogous substances, also for liquids for the purpose of mixing or otherwise, and consists in constructing a skeleton frame provided with suitable preparations to allow of the whole of the working parts to be enclosed therein by timber or other materials. On this frame is mounted a vibrating beam on knife edge or Λ centres. The scale pan for receiving the materials or substances being weighed or measured is provided with two or more pockets and is mounted on centres, to which are attached side plates connecting the same to the vibrating beam; being held in position by levers attached to the aforesaid skeleton frame. To the opposite end of the vibrating beam is attached in any convenient way a saddle or frame carrying a weight box provided with inclined doors or covers which allow of adjustment according to the quantity to be weighed or measured each draw of the vibrating beam.

The top side of the skeleton frame is provided with a hopper in which the substances are fed or delivered to the scale pan by means of a taper distributer board, on which are disposed suitable taper or angular corrugations to equalize spreading the entire width or nearly so of the pockets in the scale pan. Immediately under the distributer board is disposed a feed hopper provided with a tumbler feed tray (preferably > shaped) mounted on a spindle, to which is attached suitable levers and a parallel motion operated by flyers or projections mounted on the sides of the scale pan. The feed can be regulated by adjustable screws according to the kind of materials or substances under operation.

The scale pan is provided with lips or projections which are held in position by suitable catches and levers attached to the aforesaid side plates until the stated quantity to be weighed or measured is dropped into the scale pan, when, the latter drops and releases suitable catches which operate on the aforesaid parallel motion and shuts off the feed by the tumbler tray, during which operation other levers

[*Price* 8*d.*]

and catches liberate the lips or projections on the scale pan and thus allows the latter to revolve and deliver its contents down shoots provided on the underside of the machine to the sacks or other receptacles receiving the same. Immediately the scale pan has delivered its contents it assumes its original position when it is ready to be recharged, which takes place when a stated quantity has lodged on the tumbler tray; being regulated by suitable weights or other equivalents. The object of catching the feed on the tumbler tray is to allow the scale pan and other connections to resume their correct position before receiving the materials or substances being weighed or measured. When this action takes place the levers, catches, and other parts before named lock themselves into position, during which time a pocket in the scale pan is being filled.

To prevent the scale pan revolving the reverse way its centre is provided with a ratchet wheel on which operates a pivotted lever attached to the side plates.

When the scale pan has delivered its contents it is relocked into position by a fork lever dropping the catches when released by the flyers or projections on the sides of the scale pan.

In weighing or measuring liquids with this machine the distributing board and corrugations are dispensed with, being substituted by any ordinary means, such as, a tap or trough to supply the same.

To the side of the machine is attached an index or counter, by which the quantity or weight passed through the machine can be ascertained; the same being operated by any suitable mechanical means from the vibrating beam or other parts.

This weighing and measuring machine is automatical in its action; regulating itself in speed according to the rate at which the materials or substances are delivered to it. The whole of the parts exposed to the action of dust are constructed with round or Λ edges to prevent lodgment and ensure accuracy in weighing and measuring.

Dated this 18th day of May 1885.

EDMUND CHADWICK,
Agent for the Applicant.

COMPLETE SPECIFICATION.

Improvements in Machines for Weighing and Measuring Grain, Flour, Dust, and Liquids.

I WILLIAM OAKLEY of Albion Mills, Walsall in the County of Stafford, Miller, do hereby declare the nature of my said Invention for "IMPROVEMENTS IN MACHINES FOR WEIGHING AND MEASURING GRAIN, FLOUR, DUST, AND LIQUIDS," and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention is designed for the purpose of weighing and measuring grain, flour, dust, meal, seeds, and other analogous substances, also for liquids for the purpose of mixing or otherwise, and consists in constructing a skeleton frame provided with suitable preparations to allow of the whole of the working parts to be enclosed therein by timber or other suitable materials. On this frame is mounted a vibrating beam on knife edge or Λ centres. The scale pan for receiving the materials or substances being weighed or measured is provided with one, two, or more pockets, and is mounted on centres, to which are attached side plates connecting the same to the vibrating beam, being held in position by levers attached to the aforesaid skeleton frame. To the opposite end of the vibrating beam is attached, in any convenient way, a saddle or frame carrying a weight box provided with inclined doors or covers which allow of adjustment according to the quantity to be weighed or measured each draw of the vibrating beam. The top side of the skeleton frame is provided with a hopper in which the substances are fed or delivered to the scale pan by means of a taper distributer board, on which are disposed suitable taper or angular corrugations to equalize spreading the entire width or nearly so of the pockets in the scale pan. Immediately under the distributer board is disposed a feed hopper provided with a tumbler feed tray (preferably > shaped) mounted on a spindle, to which are attached suitable levers operated by flyers or cams mounted on the sides of the scale pan. The scale pan is provided with lips or projections or cams which are held in position by suitable catches and levers attached to the aforesaid side plates until the stated quantity to be weighed or measured is dropped into the scale pan, when the latter drops and releases suitable catches which operate on the aforesaid flyers and shuts off the feed by the tumbler tray, during which operation other levers and catches liberate the cams on the scale pan and thus allows the same to revolve and deliver its contents down shoots provided on the underside of the machine to sacks or other receptacles receiving the same. Immediately the scale pan has delivered its contents it assumes its original position when it is ready to be re-charged, which takes place when a stated quantity has lodged on the tumbler tray; being regulated by suitable weights or other equivalents. The object of catching the feed on the tumbler tray is to allow the scale pan and other connections to assume their correct position before receiving the materials or substances being weighed or measured. When this action takes place the levers, catches, and other parts before named, lock themselves into position, during which time a pocket in the scale pan is being filled.

To the side of the machine is attached an index or counter, by which the quantity or weight passed through the machine can be ascertained, the same being operated by any suitable mechanical means from the vibrating beam or other parts.

In order that my invention may be fully understood and carried into effect I will now proceed to describe the drawings hereunto annexed, the same letters and numerals of reference being used throughout all the figures to indicate the same or corresponding parts of my Invention.

Fig. 1 is a side elevation of my improved weighing and measuring machine; Fig. 2 is a front elevation of the same and Fig. 3 is a side elevation of hopper shewing the metallic frame to which it is attached, being secured by the same to the skeleton frame of the machine. Fig. 4 is an enlarged side view of Fig. 3 shewing the positions of the various levers and flyers when unlocked and feeding into the tumbler feed tray while the scale pan is revolving and emptying. Fig. 5 is an enlarged right hand side view of machine as shewn in Fig. 2 when filling direct from the shoot and taper or angular corrugations T into the scale pan, in which case the latter is locked, and Fig. 6 is a part plan of Fig. 4.

Mounted to oscillate on knife edge or ∧ centres A in the frame B is a rigid scale beam C composed of a pair of side levers suitably connected and braced by transverse bars or their equivalents. On the front end of the scale beam C hang the side plates D, being supported on the knife edge bearings E: the side plates D are jointed by the double brace F. Suspended on the side plates D is the revolving scale pan G, which may be constructed with one, two, or more pockets as desired of any preferred form and size, coupled on either side with the links H. On the sides of the revolving scale pan G are fixed the spring cams I to arrest the scale pan against the stops or stars J mounted on the centre K, and which also operate as lifters of the automatic locking and releasing apparatus. The scale pan centre or spindle L is mounted and runs in the pin centres M, to reduce friction as well as that of adjustment to maintain its correct working position. On the opposite end of the scale beam C is suspended on the knife edge centres N the weight box O, being coupled on either side with the links P. Above the scale pan is secured the hopper R by the fixing S to the frame B, into which the substances to be weighed or measured are fed or delivered into the scale pan by means of the taper or angular corrugations T on the distributer board U, the same being provided for the purpose of spreading.

The machine operates as follows:—When the scale pan G is empty and in position to receive the materials to be weighed or measured they are passed down the shoot V through the hopper R into the scale pan G, which as soon as the weight in the weight box O is overcome the scale pan with its appendages descend or fall and brings the pin 1 on the lever 3 into contact with the cam lever 2 mounted on the feed tumbler tray spindle or centre 4 and releases the flyer 6, which in falling sideways on its centre strikes the catch 7 and liberates the lever 8 on the tumbler tray spindle or centre 4, placing the tumbler tray W in the position shewn in Figs. 3 and 4, into which the material is fed while the scale pan G revolves and empties its contents down the shoot Z underneath into sacks or other receptacles. When the tumbler feed tray W falls over to collect the feed the double lever 9 and weight 10 fall down, as in Fig. 3, and lifts the catch 11 from the flyer 12: the latter falls back with the pin 13 and lifts the catch 14 out of gear with the stops or stars J, the latter, being released then revolve by the pressure of the spring cams I on the sides of the scale pan, allowing the latter to revolve and empty its contents, during which the stops or stars J operate on the feet 15 of the flyers 6 and 12 and lifts them into their original position. During the operation of rising the pin 16 in the flyer 12 places the catch 14 against the stops or stars J and locks them, by which the scale pan is arrested by contact with the cams I when it is ready for filling the pocket placed in position.

Immediately a stated quantity is admitted to the tumbler feed tray and the weight 10 is overcome it falls over and empties the contents into the scale pan,

during which the tumbler tray is locked into position by the catch 7 arresting the lever 8 as shewn in Fig. 5, at which point it remains until the scale pan falls and revolves and so on continuously. When the tumbler tray falls over and the lever 8 is locked the cam lever 2 and weight are raised as in Fig. 5 by the nosing 18 on the lever 8.

To reduce the shock from the striking of the stops or stars J the cams I are provided with the springs 20 to form a cushion.

To the side of the machine is attached the index or counter 21 for the purpose of registering the weight or quantity passed through the machine, and is operated by the rod 22 or other equivalents from the oscillating scale beam C.

The whole of the working parts are enclosed with timber as in Figs. 1 and 2, the frame B being provided with preparations for securing the same thereto.

In weighing and measuring liquids with this machine the board U and corrugations T are dispensed with, being substituted by any ordinary means, such as, a tap or trough to supply the same.

Fig. 7 is a section of the form of tumbler tray W I adopt when the machine is intended for weighing and measuring grain and liquids.

This weighing and measuring machine is automatical in its action, regulating itself in speed according to the rate at which the materials or substances or liquids are delivered to it. The whole of the parts exposed to the action of dust are constructed with round or ∧ edges to prevent lodgement and ensure accuracy in weighing or measuring.

Having now particularly described and ascertained the nature of my said Invention and in what manner the same is to be performed I declare that what I claim is:—

1. The use of the tumbler tray W and the automatic locking and releasing apparatus for operating the same for the purpose specified.

2. The use of apparatus for automatically releasing and locking the scale pan substantially as described and for the purpose specified.

3. The construction and arrangement of the scale pan mounted in pin centres for the purpose specified.

4. The use of the spring or yielding cams I mounted on the scale pan for the purpose specified.

5. The use, construction, and arrangement of parts forming my improved machine for weighing or measuring grain, flour, dust, and liquids, substantially as described and shewn on the drawings in Figs. 1 to 7.

Dated the 17th February 1886.

EDMUND CHADWICK,
Agent for Applicant.

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